

Rectus Sparing Mini Cholecystectomy

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This prospective study consists of 82 patients. They were randomly allocated Group A (mini cholecystectomy) and Group B (conventional cholecystectomy). The age and sex distribution was comparable. Minicholecystectomy was successfully performed in 39 (95%) of cases, while 2(5%) cases needed conversion to conventional cholecystectomy. The operative time and post operative complications, were comparable in two groups, except pulmonary complications which were less in mini cholecystectomy. Moreover patients in Group A has less postoperative pain, early mobility, shorter stay in hospital and early return to work. This comparative study revealed that minicholecystectomy offers the patient less postoperative pain, shorter hospitalization, early return to work and improved cosmetic results without any increased risk of major complications. In addition it does not require sophisticated expensive technology or additional specialized skills and thus can be performed by any experienced surgeon.

Key words: Minicholecystectomy, conventional cholecystectomy.

Since 1882 when the Carl Langenbuch performed first cholecystectomy¹ the cholecystectomy remains the Gold Standard for the management of gallstones². The introduction of minimal invasive surgery in early eighties, has highlighted the importance of share of trauma inflicted by the abdominal incision and surgeons have realized the surgical wound is one of the main factor for morbidity and mortality inherent to cholecystectomy.

The minicholecystectomy was first performed as early as 1982³, is an indication that surgeons are trying to reduce the morbidity. We have also conducted a prospective randomized clinical trial to investigate (i) whether cholecystectomy could be performed safely through mini-incision (ii) The impact of different lengths of abdominal incision on, post-operative pain, pulmonary & other complications, stay in hospital, early mobility and return to work.

Patients and methods

All the patients admitted for elective cholecystectomy in surgical Unit-IV, Services Hospital and then Jinnah Hospital, Lahore from July 1995 to March 1997 were randomly allocated to Group A (mini-cholecystectomy) and Group B(conventional cholecystectomy). The patients having, obstructive jaundice, acute cholecystitis, growth of gallbladder & liver and previous upper gastrointestinal surgery were excluded from the study.

All these patients after proper preparation were operated upon by consultant surgeons. A 5cm subcostal transverse incision was marked. The skin, subcutaneous

tissue and anterior rectus sheath incised. The rectus muscle retracted medially and the peritoneal cavity opened. After packing the area, the dissection started in Calot's triangle. If difficulty was encountered, the rectus muscle was divided as a first step which gives some extra space but if even this was insufficient the operation was converted to conventional cholecystectomy. While in Group B the right subcostal incision of 13-15cm length was used with division of rectus muscle.

The subhepatic space was drained using closed suction drainage system selectively in both groups and removed in 24-48 hours time. all the patients were given prophylactic 3 doses of first generation cephalosporins (Cephazolin). Wound was closed in layers with Vicryl No.1 (Posterior Rectus Sheath continuous, anterior rectus sheath with interrupted sutures). Local anaesthetic (Bupivacaine 10ml diluted to 20cc) was infiltrated around the wound and injection tramadol 50mg i/m was given at the time of recovery.

The postoperative analgesic (Tramadol 50mg) requirement was monitored carefully and patients were asked to rate their pain on verbal rating score (VRS) at 24 and 48 hours. The pulmonary complications were considered to be present when there was clinical evidence of basal atelectasis or pneumonia, which was confirmed on radiological examination. Wound infection was recorded when there was cellulitis or purulent discharge from the wound. Similarly stay in hospital, return to work and other morbidity and mortality was recorded carefully. The patients were followed in outpatient in 2 weeks and then 4 weekly for 3 months.

Results

A total number of 82 cases were included in this study, of which half (41) belongs to each group. Their age and sex distribution is shown in Fig. 1 and Fig. 2 respectively.

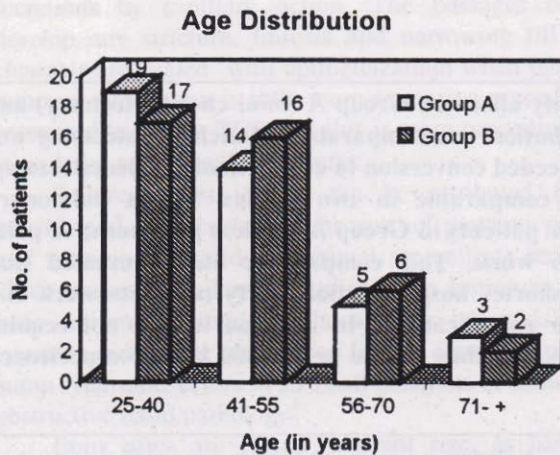


Fig. Age distribution.

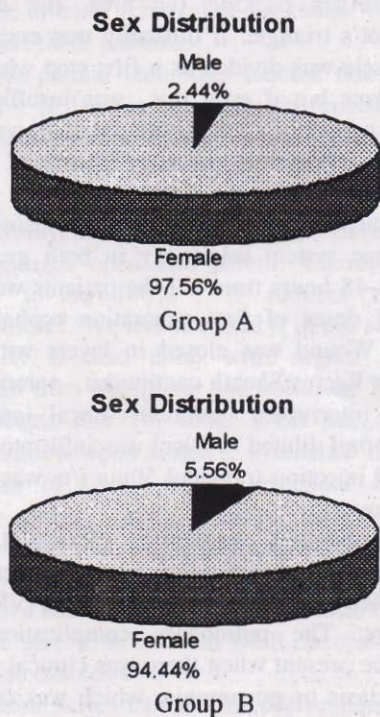


Fig. 2

The various surgical procedure performed in mini-cholecystectomy are shown in table 1.

Minicholecystectomy	No.	(%age)
Rectus sparing	37	(90.2%)
Rectus muscle divided	02	(4.9%)
Conversion to open Cholecystectomy	02	(4.9%)

Rectus sparing minicholecystectomy was successfully performed in 37(90.2%) of cases. Two patients required division of rectus muscle, one lady was extremely obese and other had dense adhesions in the area. Two patients required conversion to conventional cholecystectomy, because one needed common bile duct exploration and other had acute inflammation in Calot's triangle with difficulty to identify the anatomy. In Group B two patients required common bile duct exploration.

The postoperative analgesic requirement and subjective pain appraisal was carried out by each patient using verbal rating score (VRS) at 24, 48 hours, are shown in Table 2 and Table 3 respectively.

Table 2. Doses of analgesic required

No. of doses	Minicholecystectomy n=	Conventional cholecystectomy n=
2	13	4
3	17	9
4	8	13
5	1	13
6	0	3
7	0	2
8	0	1

Table 3. Verbal rating score.

Pain VRS Score	Minicholecystectomy n=(%Age)		Conventional Cholecystectomy n=(%Age)	
	24 Hrs	48 Hrs	24 Hrs.	48Hrs
No Pain (1)	0	1(2.5)	0	0
Mild pain(2)	7(17.9)	10(25.6)	4(9.3)	5(11.6)
Moderate pain (3)	21(53.8)	23(58.9)	16(37.2)	20(46.5)
Severe pain (4)	11(28.2)	5(12.8)	23(53.5)	18(41.9)

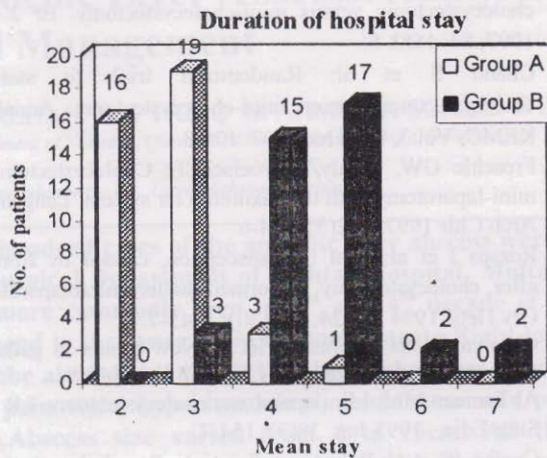
The comparison of verbal rating score (VRS) in two groups shows the clear difference, in Group A most of patients complained of mild to moderate pain in 71.7% and 87% at 24% and 48% hours respectively. VRS score of 4(severe pain) was encountered in only 28.2% and 12.8% at 24 and 48 hours. In Group B verbal rating score (VRS) score of 2-3 was seen in 46.5% and 58.1%, while verbal rating score (VRS) of 4 was encountered in 53.5% and 41.9% at 24 and 48 hours respectively.

The post operative complication in both groups were recorded and compared in Table 4. The comparison of two groups shows that the complications are slightly more common in Group B as compared to Group A. The pulmonary complications are especially significant in Group B.

Table 4. Post operative complication.

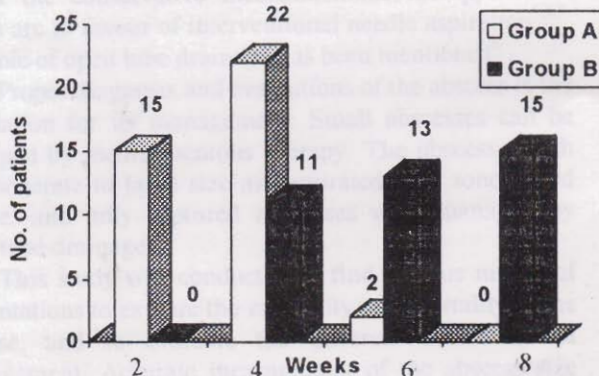
Complication	Group A (No. %age)	Group B(No. %age)
Wound infection	02(5.5.1%)	03(7%)
Pulmonary complications		
• Basal atelectasis	01(2.5%)	02(4.6%)
• Pneumonia	00	01(2.3%)
Pyrexia >100°F	2(5.1%)	4(9.3%)

Fig. 3.



The duration of hospital stay in both groups is shown in Fig 3. The hospital stay in Group A is much shorter (mean 2.6 days) as compared to Group B (Mean 4.6 days). The hospital stay of patient, with common bile duct exploration is not included in this. The patients in Group A returned to work significantly faster as compared to Group B, as shown in Fig. 4.

Fig. 4. Time to return to work



Discussion

"Greater the Surgeon, the bigger the incisions" and "Road to Hell is Paved with Small Holes" are just a few of the aphorisms that residents have heard during their training. The minimal invasive surgery has disproved these sayings and clearly demonstrated that surgical incision is one of major factor regarding morbidity and mortality⁴. But in our circumstances the laparoscopic cholecystectomy is not available even in tertiary centres and open cholecystectomy is still the most common operation carried out for gall stone disease. Improvement in technique and anaesthetic facilities has enabled us to perform this operation through smaller incision⁵.

The minicholecystectomy is defined as a conventional cholecystectomy performed through a smaller (4-6cm) transverse subcostal incision⁶. In our study in addition to smaller incision, rectus muscle was retracted medially instead of dividing it^{5,7}.

One of the argument against the minicholecystectomy is difficulty in dissection and longer operating time. But now with better anaesthetics and improved instruments, surgeons are performing micro-cholecystectomy through 3-4cm incision with specialized self illuminated retractor and clip applicator^{7,8}. Mini-cholecystectomy can be performed through smaller incision (4-6cm) with ordinary instruments and same tying material⁵. The operating time of mini-cholecystectomy is comparable to conventional cholecystectomy⁹ but even shorter when specialized instruments were used^{7,8}.

Another argument against the mini-cholecystectomy is that proper laparotomy cannot be performed through mini-incision so there is chance of missing a co-incident pathology. But in this era of modern investigations the need for thorough laparotomy is no more mandatory step in cholecystectomy. The coincidence pathology in one large series (575) was 0.17%.

There is no yardstick to measure the pain intensity, it is an entirely subjective feeling and is highly variable from individual to individual. There are two methods commonly used for measuring pain, the visual analogue scale and verbal rating score both these are subjective scales. We used verbal rating score, in our study, which showed that pain intensity was markedly less in Group A as compared to Group B¹⁰. The patients in Group A required lesser analgesic especially from 2nd day onwards there was hardly any need for injectable analgesic but Group B required more analgesics and for longer duration¹¹.

The frequency of complications has shown that there is no increased risk with mini-cholecystectomy¹¹. Rather the incidence of respiratory complications is less in mini-cholecystectomy. In our study we only monitored the complications like basal atelectasis or pneumonia. In other studies people have measured FVC, FEV₁ which were least impaired in laparoscopic cholecystectomy, less in mini-cholecystectomy and most-effected in conventional cholecystectomy¹².

The total duration of hospital stay is shorter with mini-cholecystectomy and also patient return to work earlier than conventional cholecystectomy^{9,13}. This carries its additional socioeconomic benefits. Furthermore, there is no need for specialized training and expensive equipment as in case of laparoscopic surgery. Also the mini-cholecystectomy has the additional benefits of real three dimensional view and no increased risk of dreadful

complications of laparoscopic surgery but it carries some of the advantages of laparoscopic surgery¹⁴.

Conclusion

In view of the results of present study it is suggested that in experienced hands mini-cholecystectomy is better option than conventional cholecystectomy. the mini-cholecystectomy is also a viable alternative with some of the same benefits without the problems inherent to laparoscopic cholecystectomy.

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